LABS FOR THE 21ST CENTURY

Examination of Lab Expansion Project on Optimized Central Plant System – Getting More for Less

Durham, NC – October 9, 2002

Tim Kehrli – TLK Consulting

Discussion Goals

- Review of EPA NVFEL Facility
- Planned Additions
- Integration Issues
- Future Actions

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NVFEL Facility

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NVFEL – Ann Arbor, MI

- **135,000 square foot facility**
- **1015 Tons Chiller/Heater Capacity**
- **900 KW Peak Demand**
- **3200 Mbtu hot water generator**

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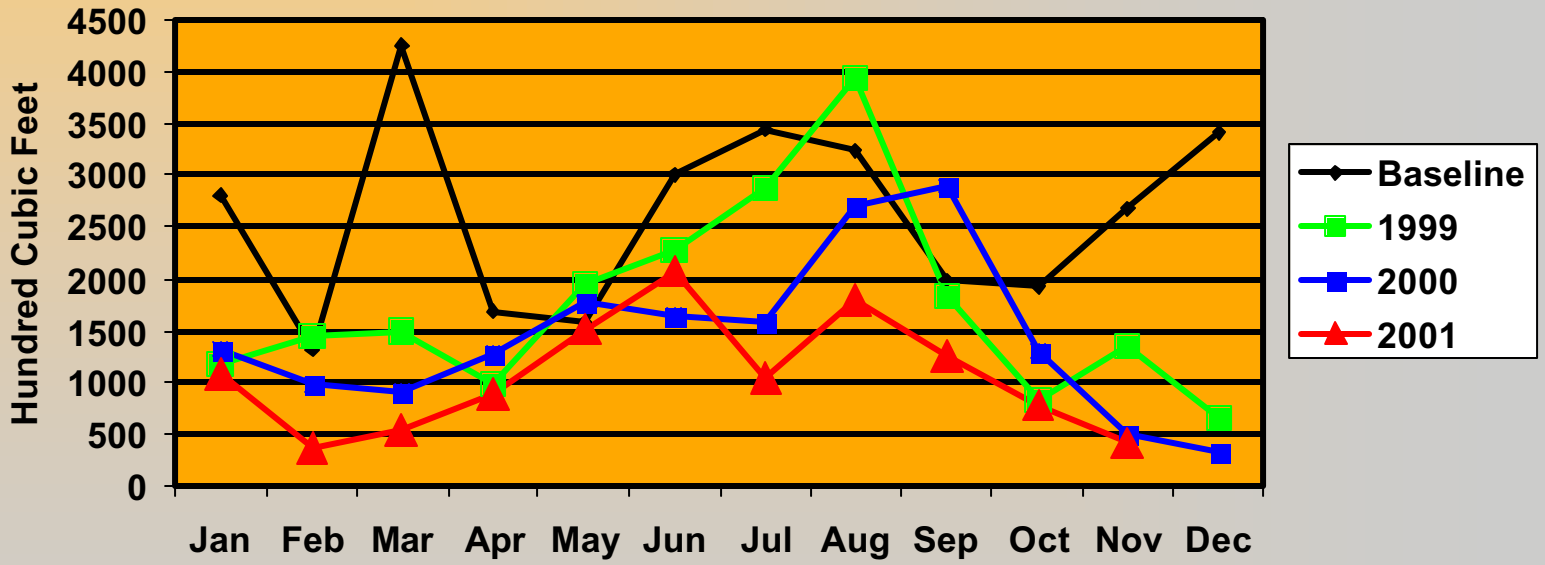
Water Use Experience



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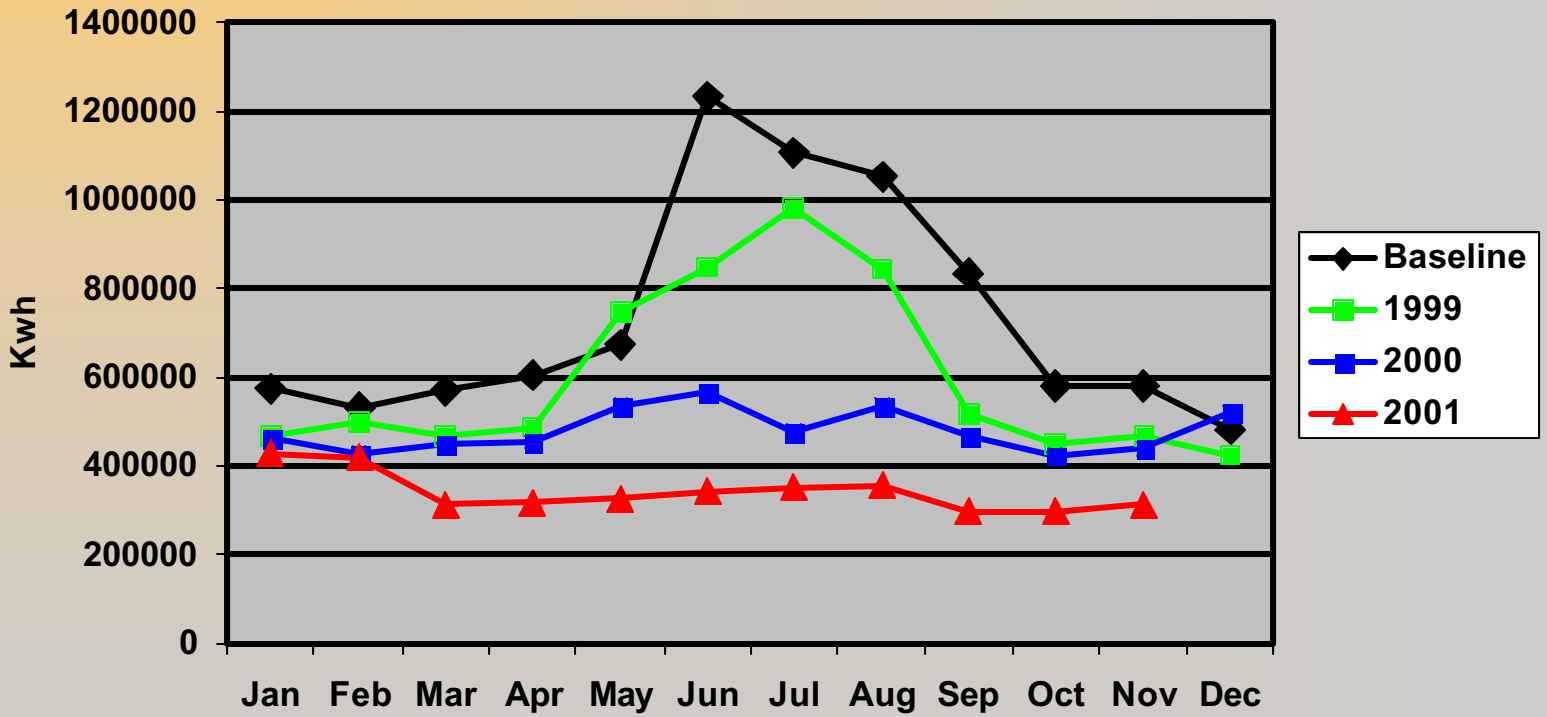
Electrical Use Experience



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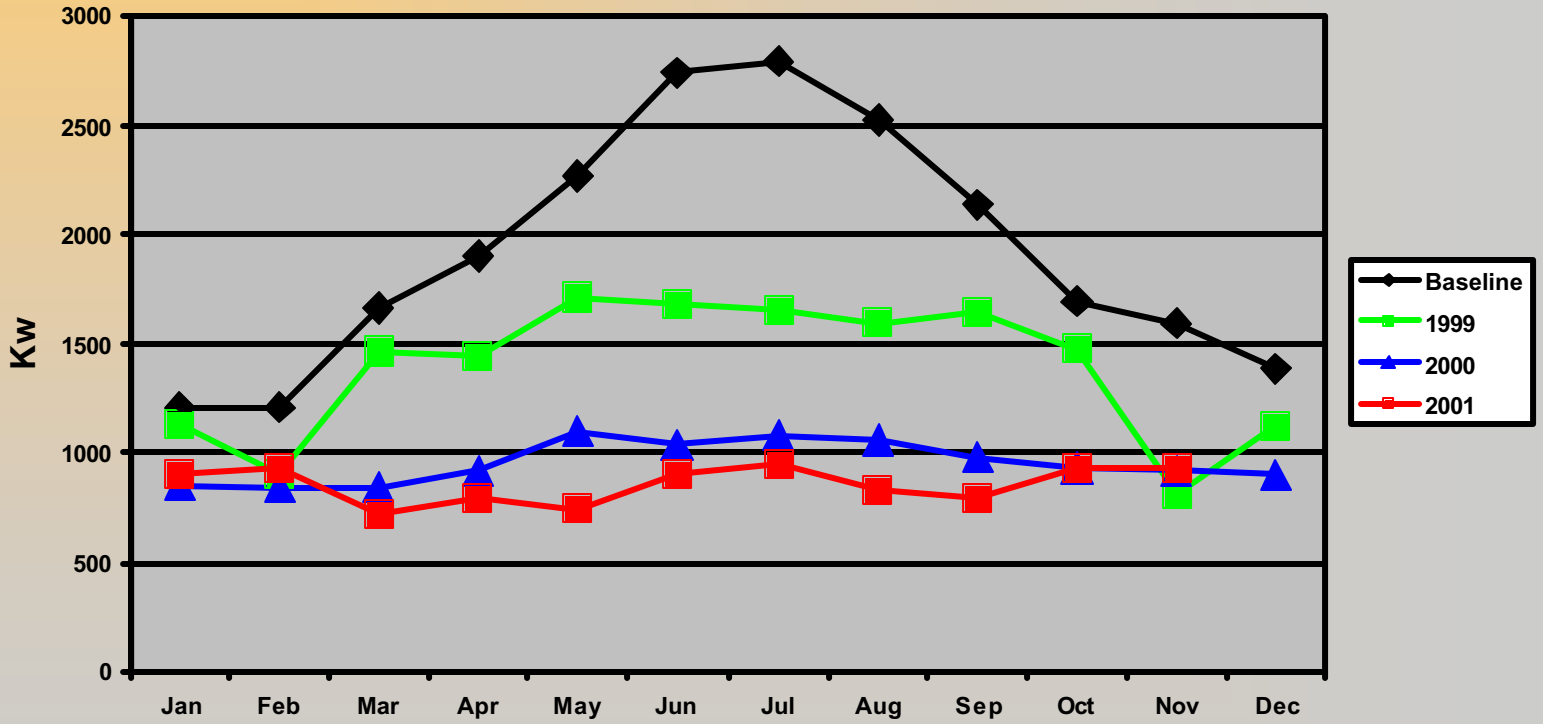
Peak Electrical Demand



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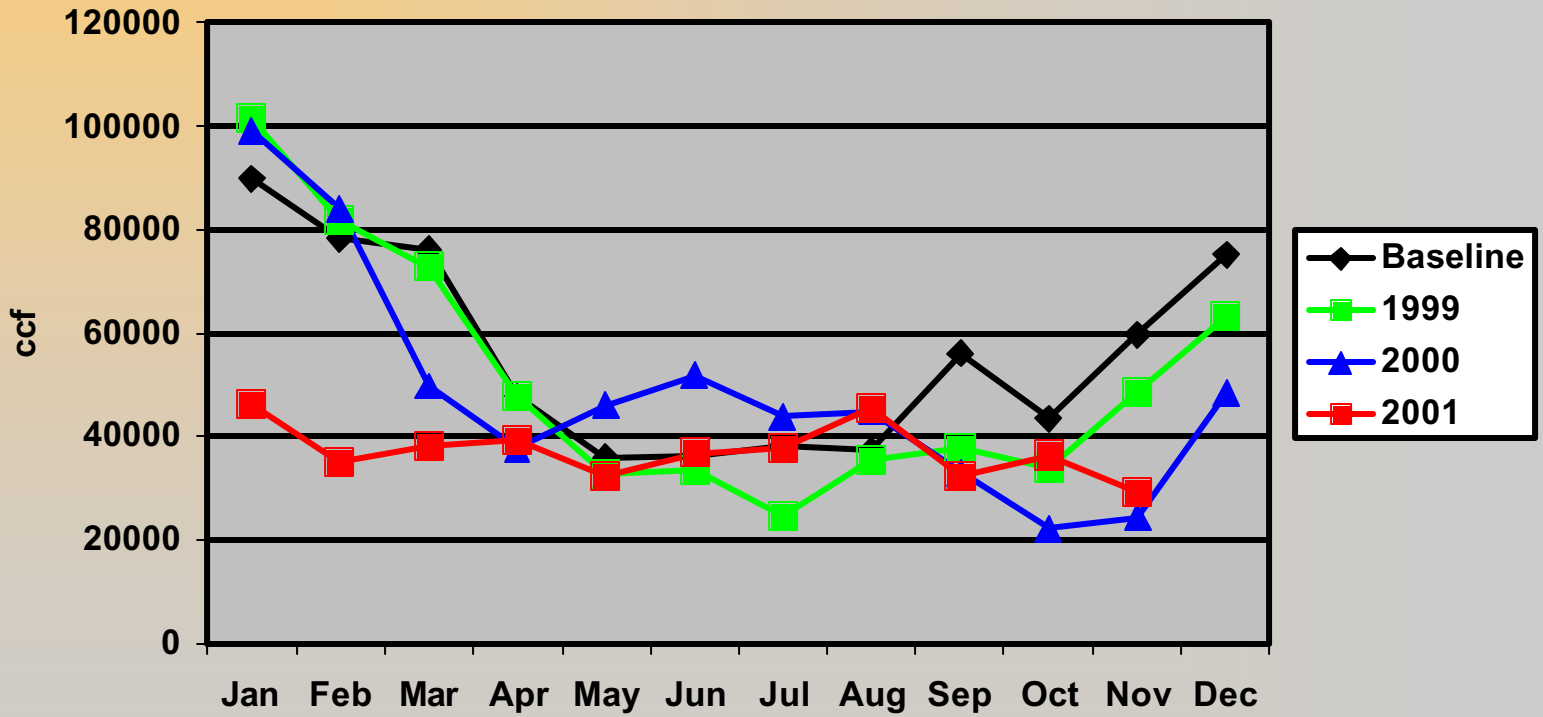
Natural Gas Usage



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Planned Additions

- Engine Build-up Facility (2002)
  - 5000 sqft.
  - 40 ton cooling load
  - Chilled water and hot water supplied from central plant
- Medium Duty/4 WD Test Facility (2003?)
  - 5100 sqft
  - Testing Cells

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Future Additions

- Master plan shows multiple spaces (20k-30k sqft.)
- Current plan does not include central plant expansion
- Master energy plan being discussed

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Questions

- What additional load can central plant handle?
- How can ESPC be integrated into expansion plans?
- What is impact on ESPC Measurement &Verification by new additions?

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Current Central Plant

- 1015 tons cooling capacity (85% peak load)
- Current expansion will add minimum 80 tons load
- Heating load not a factor in expansion (today)

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Central Plant Expansion Options

- Additional Chiller (400 ton)
- Package rooftop units
- Additional Chiller/heater unit
- Secondary Plant

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ESPC Integration Options

- Current ESCO Responsibilities
- New Addition Responsibilities
- Contract Modification Opportunities

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Measurement & Verification

- Central Plant Option B Based
  - Real Time Measurement
  - Some Stipulation
- Current plan includes efficiency improvement assumptions
- Some savings credit for ahu off hours

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Carving Out New Loads

- Monitor energy use of each new load
- Switch M&V to Option C or A
- Stipulate New Loads/Old Loads
- Its all about money$$

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Next Steps

- Continue to assess new loads and central plant impact
- Understand needs of EPA
- Consider Master plan modifications

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QUESTIONS?

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